

# **Changes in Streamflow and Water Quality in Selected Nontidal Basins in the Chesapeake Bay Watershed, 1985-2004**

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**Appendix 5.1.** Non-flow adjusted trend in load for the 9 River Input Monitoring Program Sites and 23 Multi-Agency Nontidal Monitoring Program sites, 1985-2004, sorted by site number.

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[Values are in milligrams per liter. LCI, lower confidence interval; UCI, upper confidence interval; DIP, dissolved inorganic phosphorus; NO23, nitrite plus nitrate; TN, total nitrogen; TP, total phosphorus; SED, suspended sediment; NS, no significance; SIG-UP, significantly greater than; SIG-DOWN, significantly less than; PPCC, probability plot correlation coefficient; SCR, serial correlation of residuals]

Site name	Map ID	Site No.	Beginning Date	End date	Constituent	LCI	Non-flow adjusted trend	UCI	TAU (p-value)	Significance	Comment
CHOPTANK RIVER NEAR GREENSBORO, MD	8	01491000	1985	2004	NO23	17.9	153.2	443.9	0.9290 (0.0176)	SIG-UP	-
CHOPTANK RIVER NEAR GREENSBORO, MD	8	01491000	1985	2004	TP	6.8	275.9	1223.3	1.3241 (0.0398)	SIG-UP	-
CHOPTANK RIVER NEAR GREENSBORO, MD	8	01491000	1985	2004	DIP	5.7	244.3	1021	1.2362 (0.0407)	SIG-UP	-
CHOPTANK RIVER NEAR GREENSBORO, MD	8	01491000	1985	2004	SED	-60.7	84.4	766.4	0.6120 (0.4385)	NS	-
SUSQUEHANNA RIVER AT TOWANDA, PA	1	01531500	1985	2004	TN	-63.7	-29	38.8	-0.3423 (0.3172)	NS	-
SUSQUEHANNA RIVER AT TOWANDA, PA	1	01531500	1991	2004	NO23	-59.2	-29.8	20.7	-0.3545 (0.2012)	NS	*SCR > 0.5, *PPCC < 0.95
SUSQUEHANNA RIVER AT TOWANDA, PA	1	01531500	1985	2004	TP	-67	-24.6	72.3	-0.2818 (0.5039)	NS	*SCR > 0.5
SUSQUEHANNA RIVER AT TOWANDA, PA	1	01531500	1989	2004	SED	-69.6	-18.4	118.9	-0.2036 (0.6862)	NS	-
SUSQUEHANNA RIVER AT DANVILLE, PA	2	01540500	1985	2004	TN	-58.8	-27.2	28.7	-0.3174 (0.2751)	NS	-
SUSQUEHANNA RIVER AT DANVILLE, PA	2	01540500	1985	2004	NO23	-56.7	-19.9	48.3	-0.2213 (0.4810)	NS	*PPCC < 0.95
SUSQUEHANNA RIVER AT DANVILLE, PA	2	01540500	1985	2004	TP	-68.9	-35.7	33	-0.4419 (0.2340)	NS	-
SUSQUEHANNA RIVER AT DANVILLE, PA	2	01540500	1985	2004	SED	-75.6	-23.8	137.6	-0.2724 (0.6389)	NS	-
WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA	3	01553500	1985	2004	TN	-60.7	-29.6	25.9	-0.3513 (0.2369)	NS	-
WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA	3	01553500	1985	2004	NO23	-49.6	-14.3	45.6	-0.1548 (0.5678)	NS	*SCR > 0.5
WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA	3	01553500	1985	2004	TP	-77.9	-54.3	-5.4	-0.7824 (0.0352)	SIG-DOWN	-
WEST BRANCH SUSQUEHANNA RIVER AT LEWISBURG, PA	3	01553500	1985	2004	SED	-78.3	-25.3	157.8	-0.2915 (0.6446)	NS	-
JUNIATA RIVER AT NEWPORT, PA	4	01567000	1985	2004	TN	-42.4	4.3	88.8	0.0419 (0.8902)	NS	*SCR > 0.5
JUNIATA RIVER AT NEWPORT, PA	4	01567000	1985	2004	NO23	-28.8	27.1	126.9	0.2396 (0.4183)	NS	*PPCC < 0.95
JUNIATA RIVER AT NEWPORT, PA	4	01567000	1985	2004	TP	-60.5	-22.4	52.6	-0.2536 (0.4625)	NS	-
JUNIATA RIVER AT NEWPORT, PA	4	01567000	1985	2004	SED	-78.7	-41.5	60.7	-0.5362 (0.2987)	NS	*SCR > 0.5
SUSQUEHANNA RIVER AT MARIETTA, PA	5	01576000	1985	2004	TN	-50.3	-7.8	71	-0.0816 (0.7960)	NS	*SCR > 0.5
SUSQUEHANNA RIVER AT MARIETTA, PA	5	01576000	1987	2004	NO23	-37.7	9.9	93.9	0.0943 (0.7450)	NS	*SCR > 0.5
SUSQUEHANNA RIVER AT MARIETTA, PA	5	01576000	1985	2004	TP	-60	-10.2	101.6	-0.1079 (0.7937)	NS	*SCR > 0.5
SUSQUEHANNA RIVER AT MARIETTA, PA	5	01576000	1987	2004	SED	-68.7	-14.7	132.1	-0.1593 (0.7553)	NS	-
CONESTOGA RIVER AT CONESTOGA, PA	6	01576754	1985	2004	TN	-53.1	-19.6	37.9	-0.2178 (0.4285)	NS	*SCR > 0.5
CONESTOGA RIVER AT CONESTOGA, PA	6	01576754	1986	2004	NO23	-34.4	0.7	54.6	0.0072 (0.9736)	NS	*SCR > 0.5
CONESTOGA RIVER AT CONESTOGA, PA	6	01576754	1985	2004	TP	-73.5	-39.7	37.1	-0.5062 (0.2273)	NS	*SCR > 0.5
CONESTOGA RIVER AT CONESTOGA, PA	6	01576754	1985	2004	SED	-89.1	-62.2	31.6	-0.9732 (0.1265)	NS	*SCR > 0.5
SUSQUEHANNA RIVER AT CONOWINGO, MD	7	01578310	1985	2004	TN	-54.1	-24.3	24.8	-0.2789 (0.2752)	NS	-
SUSQUEHANNA RIVER AT CONOWINGO, MD	7	01578310	1985	2004	NO23	-46.1	-11.2	46.1	-0.1190 (0.6399)	NS	*SCR > 0.5
SUSQUEHANNA RIVER AT CONOWINGO, MD	7	01578310	1985	2004	TP	-60.8	-21.9	55.6	-0.2469 (0.4826)	NS	-
SUSQUEHANNA RIVER AT CONOWINGO, MD	7	01578310	1985	2004	DIP	-26.4	49.2	202.3	0.4001 (0.2671)	NS	-

**Appendix 5.1. (Continued)** Non-flow adjusted trend in load for the 9 River Input Monitoring Program Sites and 23 Multi-Agency Nontidal Monitoring Program sites, 1985-2004, sorted by site number.

[Values are in milligrams per liter. LCI, lower confidence interval; UCI, upper confidence interval; DIP, dissolved inorganic phosphorus; NO23, nitrite plus nitrate; TN, total nitrogen; TP, total phosphorus; SED, suspended sediment; NS, no significance; SIG-UP, significantly greater than; SIG-DOWN, significantly less than; PCCC, probability plot correlation coefficient; SCR, serial correlation of residuals]

Site name	Map ID	Site No.	Beginning Date	End date	Constituent	LCI	Non-flow adjusted trend	UCI	TAU (p-value)	Significance	Comment
SUSQUEHANNA RIVER AT CONOWINGO, MD	7	01578310	1985	2004	SED	-70.6	-27.1	80.6	-0.3161 (0.4948)	NS	*SCR > 0.5
NORTH BRANCH PATAPSCO RIVER AT CEDARHURST, MD	9	01586000	1985	2004	TSS	-77	-17.3	197.8	-0.1896 (0.7719)	NS	-
NORTH BRANCH PATAPSCO RIVER AT CEDARHURST, MD	9	01586000	1985	2004	TN	-35.5	27.2	151.2	0.2409 (0.4882)	NS	-
NORTH BRANCH PATAPSCO RIVER AT CEDARHURST, MD	9	01586000	1985	2004	TP	-80.5	-40	84.3	-0.5116 (0.3728)	NS	-
PATUXENT RIV NEAR LAUREL, MD	10	01592500	1985	2004	TSS	-36	104.1	551.4	0.7136 (0.2292)	NS	-
PATUXENT RIV NEAR LAUREL, MD	10	01592500	1985	2004	TN	-46.9	67.5	427.9	0.5157 (0.3795)	NS	-
PATUXENT RIV NEAR LAUREL, MD	10	01592500	1985	2004	TP	-58	26.2	279.2	0.2328 (0.6786)	NS	-
PATUXENT RIVER NEAR BOWIE, MD	11	01594440	1985	2004	TN	-59.4	-34.2	6.4	-0.4192 (0.0884)	NS	-
PATUXENT RIVER NEAR BOWIE, MD	11	01594440	1985	2004	NO23	-56.5	-34.6	-1.7	-0.4251 (0.0415)	SIG-DOWN	-
PATUXENT RIVER NEAR BOWIE, MD	11	01594440	1985	2004	TP	-69	-36.6	29.8	-0.4553 (0.2133)	NS	-
PATUXENT RIVER NEAR BOWIE, MD	11	01594440	1985	2004	DIP	-69.7	-50.1	-17.8	-0.6956 (0.0065)	SIG-DOWN	-
PATUXENT RIVER NEAR BOWIE, MD	11	01594440	1985	2004	SED	-67	7.4	249.5	0.0711 (0.9060)	NS	-
GEORGES CREEK AT FRANKLIN, MD	12	01599000	1985	2004	TSS	-75.4	-19	167.2	-0.2107 (0.7297)	NS	-
GEORGES CREEK AT FRANKLIN, MD	12	01599000	1985	2004	TN	-69.7	-32.2	51.5	-0.3890 (0.3442)	NS	-
GEORGES CREEK AT FRANKLIN, MD	12	01599000	1985	2004	TP	-81.4	-56.5	1.7	-0.8328 (0.0561)	NS	-
WILLS CREEK NEAR CUMBERLAND, MD	13	01601500	1985	2004	TSS	-78.8	-33.2	110.6	-0.4034 (0.4914)	NS	-
WILLS CREEK NEAR CUMBERLAND, MD	13	01601500	1985	2004	TN	-77.3	-40.4	56.9	-0.5168 (0.2956)	NS	-
WILLS CREEK NEAR CUMBERLAND, MD	13	01601500	1985	2004	TP	-85.5	-59.8	11.7	-0.9113 (0.0813)	NS	-
POTOMAC RIVER AT PAW PAW, WV	14	01610000	1985	2004	TSS	-77.7	-13.1	238.1	-0.1407 (0.8394)	NS	-
POTOMAC RIVER AT PAW PAW, WV	14	01610000	1985	2004	TN	-61.9	-16.3	83.9	-0.1782 (0.6577)	NS	-
POTOMAC RIVER AT PAW PAW, WV	14	01610000	1985	2004	TP	-64.3	-12.9	112.6	-0.1376 (0.7626)	NS	-
CONOCOHEAGUE CREEK AT FAIRVIEW, MD	15	01614500	1985	2004	TSS	-55.6	84.3	665.1	0.6114 (0.4007)	NS	-
CONOCOHEAGUE CREEK AT FAIRVIEW, MD	15	01614500	1985	2004	TN	-37.6	46.9	246	0.3847 (0.3790)	NS	*SCR > 0.5
CONOCOHEAGUE CREEK AT FAIRVIEW, MD	15	01614500	1985	2004	NO23	-32.6	39.9	190.2	0.3356 (0.3677)	NS	*SCR > 0.5
CONOCOHEAGUE CREEK AT FAIRVIEW, MD	15	01614500	1985	2004	TP	-51.3	40.4	304.9	0.3395 (0.5300)	NS	*SCR > 0.5
CONOCOHEAGUE CREEK AT FAIRVIEW, MD	15	01614500	1985	2004	DIP	-73.5	-44.5	16.3	-0.5893 (0.1192)	NS	*SCR > 0.5
ANTIETAM CREEK NEAR SHARPSBURG, MD	16	01619500	1985	2004	TSS	-74.4	28.7	548.1	0.2523 (0.7600)	NS	-
ANTIETAM CREEK NEAR SHARPSBURG, MD	16	01619500	1985	2004	TN	-59.2	1.2	151.4	0.0122 (0.9791)	NS	-
ANTIETAM CREEK NEAR SHARPSBURG, MD	16	01619500	1985	2004	TP	-72.3	-41.2	24.6	-0.5316 (0.1670)	NS	-
SOUTH RIVER NEAR WAYNESBORO, VA	17	01626000	1985	2004	TSS	-82.6	-44.5	77.4	-0.5879 (0.3223)	NS	-
SOUTH RIVER NEAR WAYNESBORO, VA	17	01626000	1985	2004	TN	-62	-23.6	53.6	-0.2687 (0.4515)	NS	-
SOUTH RIVER NEAR WAYNESBORO, VA	17	01626000	1985	2004	TP	-86.7	-72.4	-42.4	-1.2861 (0.0007)	SIG-DOWN	-

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Site name	Map ID	Site No.	Beginning Date	End date	Constituent	LCI	Non-flow adjusted trend	UCI	TAU (p-value)	Significance	Comment
S F SHENANDOAH RIVER AT FRONT ROYAL, VA	18	01631000	1985	2004	TSS	-87	-32	255.6	-0.3850 (0.6487)	NS	-
S F SHENANDOAH RIVER AT FRONT ROYAL, VA	18	01631000	1985	2004	TN	-70.9	-34.5	47.5	-0.4232 (0.3077)	NS	-
S F SHENANDOAH RIVER AT FRONT ROYAL, VA	18	01631000	1985	2004	TP	-65	-21.8	74.5	-0.2461 (0.5483)	NS	-
S F SHENANDOAH RIVER AT FRONT ROYAL, VA	18	01631000	1985	2004	DIP	-55.9	1.5	133.6	0.0149 (0.9720)	NS	-
N F SHENANDOAH RIVER NEAR STRASBURG, VA	19	01634000	1985	2004	TSS	-70.7	103.8	1319.1	0.7121 (0.4729)	NS	*PPCC < 0.95
N F SHENANDOAH RIVER NEAR STRASBURG, VA	19	01634000	1985	2004	TN	-8.7	122.1	440.6	0.7981 (0.0796)	NS	-
N F SHENANDOAH RIVER NEAR STRASBURG, VA	19	01634000	1985	2004	TP	162.1	541.9	1472	1.8592 (<0.0001)	SIG-UP	-
N F SHENANDOAH RIVER NEAR STRASBURG, VA	19	01634000	1985	2004	DIP	362.6	1080.2	2911	2.4683 (<0.0000)	SIG-UP	-
MONOCACY RIVER AT BRIDGEPORT, MD	20	01639000	1985	2004	TSS	-74.1	-17.9	161	-0.1967 (0.7391)	NS	-
MONOCACY RIVER AT BRIDGEPORT, MD	20	01639000	1985	2004	TN	-68.2	-12.8	138.8	-0.1373 (0.7896)	NS	*SCR > 0.5
MONOCACY RIVER AT BRIDGEPORT, MD	20	01639000	1985	2004	TP	-73.2	-14.7	171.4	-0.1595 (0.7872)	NS	-
MONOCACY RIVER AT JUG BRIDGE NEAR FREDERICK, MD	21	01643000	1985	2004	TSS	-70.5	36.7	533.8	0.3126 (0.6899)	NS	-
MONOCACY RIVER AT JUG BRIDGE NEAR FREDERICK, MD	21	01643000	1985	2004	TN	-51.3	10.4	150.7	0.0993 (0.8126)	NS	-
MONOCACY RIVER AT JUG BRIDGE NEAR FREDERICK, MD	21	01643000	1985	2004	TP	-55.3	2.9	136.8	0.0283 (0.9471)	NS	-
POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC	23	01646580	1985	2004	TN	-64	3.7	199	0.0363 (0.9464)	NS	*SCR > 0.5
POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC	23	01646580	1985	2004	NO23	-59.1	12.7	210.2	0.1193 (0.8175)	NS	*SCR > 0.5, *PPCC < 0.95
POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC	23	01646580	1985	2004	TP	-55.2	78.2	608.3	0.5779 (0.4119)	NS	*SCR > 0.5
POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC	23	01646580	1985	2004	DIP	-51.5	54.1	389.8	0.4327 (0.4634)	NS	*SCR > 0.5
POTOMAC RIVER AT CHAIN BRIDGE, AT WASHINGTON, DC	23	01646580	1985	2004	SED	-92.2	-46	274.9	-0.6156 (0.5339)	NS	-
NW BRANCH ANACOSTIA RIVER NEAR HYATTSVILLE, MD	22	01651000	1985	2004	TSS	-73.1	-31	76.6	-0.3713 (0.4394)	NS	-
NW BRANCH ANACOSTIA RIVER NEAR HYATTSVILLE, MD	22	01651000	1985	2004	TN	-49.2	-7.7	67.8	-0.0801 (0.7929)	NS	-
NW BRANCH ANACOSTIA RIVER NEAR HYATTSVILLE, MD	22	01651000	1985	2004	TP	-62.2	-19.1	73	-0.2118 (0.5852)	NS	-
ROBINSON RIVER NEAR LOCUST DALE, VA	24	01666500	1985	2004	TSS	-76.6	8.1	399.8	0.0777 (0.9209)	NS	-
ROBINSON RIVER NEAR LOCUST DALE, VA	24	01666500	1985	2004	TN	-63.2	-13	105.5	-0.1392 (0.7512)	NS	-
ROBINSON RIVER NEAR LOCUST DALE, VA	24	01666500	1985	2004	TP	-83.9	-55.3	24.2	-0.8050 (0.1244)	NS	*PPCC < 0.95
RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA	25	01668000	1988	2004	TSS	-77.5	47.2	863.8	0.3864 (0.6872)	NS	-
RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA	25	01668000	1985	2004	TN	-65.9	31.6	407.3	0.2747 (0.6900)	NS	-
RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA	25	01668000	1985	2004	NO23	-82.7	-17.4	293.3	-0.1910 (0.8105)	NS	-
RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA	25	01668000	1985	2004	TP	-75.6	31.2	605.6	0.2716 (0.7518)	NS	-
RAPPAHANNOCK RIVER NEAR FREDERICKSBURG, VA	25	01668000	1985	2004	DIP	-65.8	30.9	400.4	0.2690 (0.6944)	NS	-
NORTH ANNA RIVER AT HART CORNER NEAR DOSWELL, VA	27	01671020	1985	2004	TSS	-71.5	50.6	694.6	0.4094 (0.6300)	NS	-
NORTH ANNA RIVER AT HART CORNER NEAR DOSWELL, VA	27	01671020	1985	2004	TN	-70.7	-11.7	165.9	-0.1244 (0.8252)	NS	-

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Site name	Map ID	Site No.	Beginning Date	End date	Constituent	LCI	Non-flow adjusted trend	UCI	TAU (p-value)	Significance	Comment
NORTH ANNA RIVER AT HART CORNER NEAR DOSWELL, VA	27	01671020	1985	2004	TP	-95.2	-84.8	-51.5	-1.8847 (0.0017)	SIG-DOWN	-
PAMUNKEY RIVER NEAR HANOVER, VA	28	01673000	1989	2004	TSS	-71.5	18.7	395.2	0.1715 (0.8140)	NS	-
PAMUNKEY RIVER NEAR HANOVER, VA	28	01673000	1985	2004	TN	-69.8	-2.9	212.2	-0.0297 (0.9603)	NS	-
PAMUNKEY RIVER NEAR HANOVER, VA	28	01673000	1985	2004	NO23	-55	23.3	237.6	0.2095 (0.6836)	NS	-
PAMUNKEY RIVER NEAR HANOVER, VA	28	01673000	1985	2004	TP	-52	60	433	0.4698 (0.4445)	NS	-
PAMUNKEY RIVER NEAR HANOVER, VA	28	01673000	1985	2004	DIP	-2	114.1	368	0.7614 (0.0568)	NS	-
MATTAPONI RIVER NEAR BEULAHVILLE, VA	26	01674500	1989	2004	TSS	-81.6	-27.9	182.6	-0.3273 (0.6388)	NS	-
MATTAPONI RIVER NEAR BEULAHVILLE, VA	26	01674500	1985	2004	TN	-84.4	-35.2	169	-0.4337 (0.5506)	NS	-
MATTAPONI RIVER NEAR BEULAHVILLE, VA	26	01674500	1985	2004	NO23	-82.2	-36.1	129.6	-0.4476 (0.4930)	NS	-
MATTAPONI RIVER NEAR BEULAHVILLE, VA	26	01674500	1985	2004	TP	-85.9	-39	163	-0.4951 (0.5071)	NS	-
MATTAPONI RIVER NEAR BEULAHVILLE, VA	26	01674500	1985	2004	DIP	-76.6	-16.5	197.9	-0.1798 (0.7817)	NS	-
JAMES RIVER AT BENT CREEK, VA	29	02026000	1985	2004	TSS	-76.1	-9.9	239.7	-0.1047 (0.8773)	NS	-
JAMES RIVER AT BENT CREEK, VA	29	02026000	1985	2004	TN	-64.9	-31.6	33.6	-0.3792 (0.2678)	NS	-
JAMES RIVER AT BENT CREEK, VA	29	02026000	1985	2004	TP	-89	-80.5	-65.4	-1.6368 (<0.0000)	SIG-DOWN	-
JAMES RIVER AT CARTERSVILLE, VA	30	02035000	1988	2004	TSS	-84.1	-37.1	149.1	-0.4634 (0.5095)	NS	-
JAMES RIVER AT CARTERSVILLE, VA	30	02035000	1985	2004	TN	-70.6	-22.9	102.1	-0.2597 (0.5974)	NS	-
JAMES RIVER AT CARTERSVILLE, VA	30	02035000	1985	2004	NO23	-82.6	-52.4	30.5	-0.7417 (0.1497)	NS	-
JAMES RIVER AT CARTERSVILLE, VA	30	02035000	1985	2004	TP	-82.8	-54.7	19.6	-0.7921 (0.1104)	NS	-
JAMES RIVER AT CARTERSVILLE, VA	30	02035000	1985	2004	DIP	-84.5	-74.1	-56.7	-1.3501 (<0.0000)	SIG-DOWN	-
JAMES RIVER NEAR RICHMOND, VA	31	02037500	1985	2004	TSS	-81.5	-3	408.6	-0.0301 (0.9717)	NS	-
JAMES RIVER NEAR RICHMOND, VA	31	02037500	1985	2004	TN	-67.5	-17.6	109	-0.1939 (0.6837)	NS	-
JAMES RIVER NEAR RICHMOND, VA	31	02037500	1985	2004	TP	-87.1	-69.5	-28	-1.1882 (0.0074)	SIG-DOWN	-
APPOMATTOX RIVER AT MATOACA, VA	32	02041650	1989	2004	TSS	-73.1	-10.6	196.9	-0.1120 (0.8549)	NS	-
APPOMATTOX RIVER AT MATOACA, VA	32	02041650	1985	2004	TN	-71.1	-10.6	177.2	-0.1118 (0.8465)	NS	-
APPOMATTOX RIVER AT MATOACA, VA	32	02041650	1985	2004	NO23	-72.6	-24.6	107.7	-0.2821 (0.5853)	NS	-
APPOMATTOX RIVER AT MATOACA, VA	32	02041650	1985	2004	TP	-68.5	16	327.7	0.1488 (0.8232)	NS	-
APPOMATTOX RIVER AT MATOACA, VA	32	02041650	1985	2004	DIP	-68.6	-7.5	172.4	-0.0780 (0.8875)	NS	-